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09/834,085	04/11/2001	Yasuhiro Nishiyama	9281-3943	2759

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Brinks Hofer Gilson & Lione
P.O. Box 10395
Chicago, IL 60610

EXAMINER
KLIMOWICZ, WILLIAM JOSEPH

ART UNIT	PAPER NUMBER
2652	12

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/834,085	Applicant(s) NISHIYAMA ET AL.	
	Examiner William J. Klimowicz	Art Unit 2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 May 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *6,7 and 13-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-12,21 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 22 (line 2), the phrase "the gap layers" lacks positive antecedent basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 8, 9, 11, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al. (US 5,719,730).

As per claim 1, Chang et al. (US 5,719,730) discloses a thin film magnetic head (FIGS. 1-5) comprising: an insulating gap layer (e.g., 18) provided between cores (16, 18) made of a magnetic material; and a coil for inducing a recording magnetic field in the cores (16, 18) (e.g.,

see COL. 6, lines 10-21), wherein the cores have a facing surface, wherein the amount of protrusion of the insulating gap layer from the facing surface is inherently less than or equal to about 3.5 nm (or less than or equal to about 3 nm as per claims 21 and 22). This inherency is based on the material of the gap layer (18), which is disclosed as silicon oxynitride (SiON). The gap layer (18) comprises a SiON film (e.g., see COL. 5, lines 22-30 in conjunction with COL. 6, lines 52-59).

As per claims 2 and 9, wherein the Young's modulus E of the gap layer (18) is inherently seen to be $E > 123.2$ (GPa) and ≥ 127.4 (Gpa) as per claims 4 and 11. This inherency is based on the material of the gap layer (18), which is disclosed as silicon oxynitride (SiON).

As per claim 8, Chang et al. (US 5,719,730) further discloses a magnetoresistive element (12) capable of detecting a recording signal due to a change in electric resistance with an external magnetic field; and shield layers (10, 16) formed above and below the magnetoresistive element (12) with gap layers provided therebetween (lower gap layer of (14) is formed prior to deposition of MR sensor (12) and upper gap layer of (14) is deposited over the MR sensor after formation of the MR sensor), wherein at least one of the gap layers (14) comprises a SiON film. The amount of protrusion of the insulating gap layer from the facing surface is inherently less than or equal to about 3.5 nm. This inherency is based on the material of the gap layer (18), which is disclosed as silicon oxynitride (SiON). See COL. 5, lines 11-30.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 5, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US 5,719,730).

With regard to claims 3, 5, 10 and 12, although Chang et al. (US 5,719,730) remains silent with respect to the specific concentration of nitrogen within the silicon oxynitride gap layer (18), it is notoriously old and well known in the magnetic head art to routinely modify a magnetic head gap layer composition in the course of routine optimization/experimentation and thereby obtain various standard optimized relationships including those set forth in claims 3, 5, 10 and 12.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the magnetic head of Chang et al. (US 5,719,730) satisfy the relationships set forth in claims 3, 5, 10 and 12 as it pertains to the atomic concentration of nitrogen within the disclosed SiON gap layer.

The rationale is as follows: one of ordinary skill in the art would have been motivated to have had the magnetic head of Chang et al. (US 5,719,730) satisfy the relationships set forth in claims 3, 5, 10 and 12 as it pertains to the atomic concentration of nitrogen within the disclosed SiON gap layer, since it is notoriously old and well known in the magnetic head art to routinely modify a the atomic composition percentage of a disclosed gap layer in the course of routine optimization /experimentation and thereby obtain various standard optimized relationships (such as resistivity of gap layer to reduce electrical shortings, strength and/or hardness of gap layer,

smoothness of gap layer, etc. which within the general knowledge of the art, are factors that are recognized as result-effective variables) including those set forth in claims 3, 5, 10 and 12.

Moreover, absent a showing of criticality (i.e., unobvious or unexpected results), the relationships set forth in claims 3, 5, 10 and 12 are considered to be within the level of ordinary skill in the art.

Additionally, the law is replete with cases in which when the mere difference between the claimed invention and the prior art is some range, variable or other dimensional limitation within the claims, patentability cannot be found.

It furthermore has been held in such a situation, the Applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Moreover, the instant disclosure does not set forth evidence ascribing unexpected results due to the claimed dimensions. See *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338 (Fed. Cir. 1984), which held that the dimensional limitations failed to point out a feature which performed and operated any differently from the prior art.

Response to Arguments

Applicants' arguments filed May 6, 2003 (Paper No. 11) have been fully considered but they are not persuasive.

The Applicants allege that Chang et al. (US 5,719,730) fails to expressly state whether the insulating layers, as set forth in claims 1 and 8, protrude or are coplanarv with an air bearing surface.

As set forth in the rejection, *supra*, Chang et al. (US 5,719,730) discloses a thin film magnetic head (FIGS. 1-5) comprising: an insulating gap layer (e.g., 18) provided between cores (16, 18) made of a magnetic material. The amount of protrusion of the insulating gap layer from the facing surface is inherently less than or equal to about 3.5 nm (or less than or equal to about 3 nm as per claims 21 and 22). This inherency is based on the material of the gap layer (18), which is disclosed as silicon oxynitride (SiON) (e.g., see COL. 5, lines 22-30 in conjunction with COL. 6, lines 52-59). Similarly, with regard to claim 8, MR gap layers are provided (lower/upper gap layer of (14)), wherein the amount of protrusion of the insulating gap layer from the facing surface is inherently less than or equal to about 3.5 nm. Again, this inherency is based on the material of the gap layer (18), which is disclosed as silicon oxynitride (SiON). See COL. 5, lines 11-30.

The Applicants have failed to provide any affidavit, or convincing line of scientific reasoning, that would distinguish the claimed insulating gap material formed of silicon oxynitride (SiON), which based on its composition, results in a protrusion of less than 3.5 nm, from Chang et al. (US 5,719,730), who discloses the ***identically claimed silicon oxynitride*** (SiON). There is nothing in the claimed invention that differentiates the instantly claimed composition of Applicants from Chang et al. (US 5,719,730), at least as set forth in claims 1 and 8.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Klimowicz whose telephone number is (703) 305-3452. The examiner can normally be reached on Monday-Thursday (6:30AM-5:00PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

William J. Klimowicz
Primary Examiner
Art Unit 2652

WJK
July 29, 2003